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great service to those who are not extreme specialists in the classification of seed-plants. The collated literature is supplemented by the large experience of the author, so that in a sense the presentation is distinctly a fresh one.

This book and others like it serve to emphasize the increasing differentiation between the specialists in morphology and those in classification. It is no longer possible for one man to do justice to both subjects in a single book. One or the other dominates in accordance with the larger interest of the author, and the other phase receives comparatively scant attention. In the book before us taxonomy is dominant, and only that amount of morphology is presented which is supposed to be of importance to a specialist in taxonomy. In other books morphology is dominant and taxonomy reduced to a bare outline. There is an additional complication in the case of seed-plants because of an old morphology that belongs to them. The old morphology has more dealings with taxonomy than it does with the new morphology, and will doubtless continue to be exploited chiefly by taxonomists. Anatomy has already become distinctly differentiated as a subject, and the morphologist of either kind has learned to touch it very lightly.—J. M. C.

#### MINOR NOTICES.

THE ISSUE of the twelfth edition of PRANTL'S *Lehrbuch der Botanik*, under the editorship of DR. PAX,<sup>5</sup> indicates that this book holds an assured place among German text-books. The present edition has been very slightly enlarged, though brought into line with modern work in many places. Improvements are also noticeable in many figures and some new ones are introduced.

Of its kind the book is excellent, but the kind no longer appeals to American botanists as a model. For it gives 122 pages to anatomy, 53 pages to physiology, and 279 to the dreary synopsis of plant families, which we suppose medical students and other victims of the required "allgemeine Botanik" are still forced to study—else it would hardly form so dominant a part of all German text-books. It might be well for our German friends to undertake a reform movement in botanical instruction.—C. R. B.

THE NINETEENTH PART of ENGLER'S *Das Pflanzenreich* consists of a presentation of Betulaceae by WINKLER.<sup>6</sup> The usual critical discussion of structure, geographic distribution, and systems of classification is followed by descriptions of 83 species recognized as representing 6 genera, all but 11 of the species belonging to *Betula* (37), *Carpinus* (18), and *Alnus* (17). In *Carpinus* 7 new species are described, and in *Betula* 3, but none of them belong to the American flora. Dr. BRITTON'S 4 new species of *Betula* recently described<sup>7</sup> are referred to in the *Addendum* as not examined. The conservative tendency of the work is indicated

<sup>5</sup> PAX, F., PRANTL'S *Lehrbuch der Botanik*. 12th ed. Imp. 8vo. pp. viii+478. figs. 439. Leipzig: Wilhelm Engelmann. 1904.

<sup>6</sup> ENGLER, A., *Das Pflanzenreich*. Heft 19. Betulaceae von HUBERT WINKLER. pp. 149. Leipzig: Wilhelm Engelmann. 1904. M 7.60.

<sup>7</sup> Bull. Torr. Bot. Club 31: 165. 1904.

not only by the few new species, but chiefly by the numerous varieties, especially in *Alnus*.—J. M. C.

TO ACCOMPANY his secondary school text-books, which imply a considerable amount of laboratory work in botany. Mr. J. Y. BERGEN has prepared a *Notebook*,<sup>8</sup> in which he has arranged directions for experiments, chiefly physiological, with various useful suggestions to the student, intending thereby to promote neat and thorough reports of the work. Most teachers will prefer the loose-leaf notebook, which permits criticism and correction without permanently marring the record. The laboratory directions of course minimize dictation and copying, but the forms also curtail freedom and initiative which it is equally important to cultivate.—C. R. B.

MISS PERKINS<sup>9</sup> has published the second fascicle of her contributions to the flora of the Philippine Islands. Numerous families are represented more or less extensively, the more important contributions dealing with Marantaceae, Leguminosae (9 n. spp.), the genus *Canarium* (Burseraceae) with 14 new species, Tiliaceae (9 n. spp.), Sterculiaceae (5 n. spp.), Asclepiadaceae (by R. SCHLECHTER and O. WARBURG) with 24 new species and a new genus (*Dorystephania*), and Gramineae (by C. MEZ and R. PILGER) with 4 new species.—J. M. C.

THE SIXTH FASCICLE of Roth's *Europäischen Laubmoose*<sup>10</sup> begins the Bryaceae, describing, with the help of ten plates, 21 species of *Webera*, 108 of *Bryum*, and 13 of other genera. The seventh fascicle completes the Bryaceae, Mniaceae, Meeseaceae, Aulacomniaceae, Bartramiaceae, Timmiaceae, and begins the Polytrichaceae. The ten plates, however, are almost wholly devoted to Bryaceae.—C. R. B.

MAIDEN,<sup>11</sup> in the fourth part of his revision of *Eucalyptus*, presents *E. incrasata* Labillardière and *E. joecunda* Schauer, the description in each case being followed by discussion of synonymy, range, and affinities.—J. M. C.

#### NOTES FOR STUDENTS.

PORODKO, as a result of his researches on the oxidases,<sup>12</sup> concludes that they probably do not take part in the process of respiration. He also contributes some facts to the technique of the guaiac reaction.—C. R. B.

<sup>8</sup> BERGEN, J. Y., Notebook to accompany Bergen's text-books of botany or for general use in botanical laboratories of secondary schools. 4to. pp. 144. Boston: Ginn & Co. 1904. 75 cents.

<sup>9</sup> PERKINS, J., Fragmenta florae Philippinae. Fasciculus II. pp. 67-152. pls. 1-3. Leipzig: Gebrüder Borntraeger. 1904. M5.

<sup>10</sup> ROTH, GEORG, Die europäischen Laubmoose. 2 Band. 6 Lieferung. Imp. 8vo. pp. 1-128. pls. 1-10. 7 Lieferung. pp. 129-256. pls. 11-20. Leipzig: Wilhelm Engelmann. 1904. Each M 4. (Parts not sold singly.)

<sup>11</sup> MAIDEN, J. H., A critical revision of the genus *Eucalyptus*. Part IV. pp. 93-124. pls. 13-24. Government of New South Wales: 1904.

<sup>12</sup> PORODKO, T., Zur Kenntniss der pflanzlichen Oxidases. Beihefte Bot. Cent. 16: 1-10. 1904.